Clean Copy of Pending Claims 1-20

Claim 1. A mass spectrometry process for analyzing a mixture of substances using a triple quadrupole mass spectrometer, wherein said mixture is ionized before the analysis, which comprises the following steps:

a) selecting a mass/charge quotient (m/z) of an ion formed by ionization in a first analytical quadrupole (I) of the mass spectrometer,

b) fragmenting the ion selected by applying an acceleration voltage in a following quadrupole (II) which is filled with a collision gas and functions as a collision chamber,

c) selecting a mass/charge quotient of the fragment ion in a downstream quadrupole (III), and

d) analyzing the mass/charge quotients of additional ions present in the mixture as a result of the ionization, wherein the following quadrupole (II) is filled with a collision gas but no acceleration voltage is applied during the analysis;

and wherein the steps (a) to (c) and step (d) may also be carried out in reverse sequence.

Claim 2. The process of claim 1, wherein the ionization of the mixture is upstream of a chromatographic separation.

Claim 3. The process of claim 2, wherein the chromatographic separation is an HPLC separation.

Claim 4. The process of claim 1, wherein steps (a) to (d) are run through at least once within from 0.1 to 10 seconds.

Claim 5. The process of claim 1, wherein steps (a) to (d) are run through at least once within from 0.2 to 2 seconds.

Claim 6. The process of claim 1, wherein the ionization is effected by evaporating the mixture and ionizing in a gas phase.

Claim 7. The process of claim 1, wherein the ionization is effected by atomizing the mixture in an electrical field.

Claim 8. The process of claim 1, wherein analysis is effected in step (a) between 1 and 100 mass/charge quotients of different ions formed by ionization and selected.

Claim 9. The process of claim 1, wherein the mixture is of biological or chemical origin.

Claim 10. The process of claim 1, wherein the mixture is derivatized before the analysis.

Claim 11. The process of claim 1, wherein the substances within the mixture are not required to be purified.

Claim 12. The process of claim 1, which further comprises a high-throughput screening.

Claim 13. The process of claim 1, wherein the fragment ion analyzed in step (c) is quantified for all ions present in the mixture.

Claim 14. The process of claim 2, wherein the mixture is derivatized before the chromatographic separation.

Claim 15. The process of claim 1, wherein the ionization is effected by desorbing the mixture on a surface.

Claim 16. The process of claim 1, wherein the (m/z) quotient analyzed in step (d) is quantified for all ions present in the mixture.

Claim 17. The process of claim 1, wherein both the fragment ion analyzed in step (c) and the (m/z) quotient analyzed in step (d) are quantified.

Claim 18. The process of claim 1, wherein both the fragment ion analyzed in step (c) and the (m/z) quotient analyzed in step (d) are quantified for all ions present in the mixture.

Claim 19. A mass spectrometry process for analyzing a mixture of substances, which does not require purification of said substances from the mixture, comprising:

a) ionizing said mixture by evaporating and ionizing the mixture in a gas phase, by desorbing the mixture on a surface, or by atomizing the mixture in an electrical field;

b) selecting a mass/charge quotient (m/z) of an ion formed by ionization in a first analytical quadrupole (I) of a triple quadrupole mass spectrometer;

c) fragmenting the ion selected by applying an acceleration voltage in a following quadrupole (II) which is filled with a collision gas and functions as a collision chamber;

d) selecting a mass/charge quotient of the fragment ion in a downstream quadrupole (III); and

e) analyzing the mass/charge quotients of additional ions present in the mixture as a result of the ionization, wherein the following quadrupole (II) is filled with a collision gas but no acceleration voltage is applied during the analysis;

and wherein steps (b) to (d) and step (e) may be carried out in reverse sequence.

Claim 20. The process of claim 19, wherein one or more of the substances within the mixture are identified and quantified.